DOCUMENT RESUME

ED 437 936 IR 020 299

| | |
|---|---|
| AUTHOR | Carruthers, Iva E. |
| TITLE | ERIC Products and Information Dissemination. |
| SPONS AGENCY | Educational Resources Information Center (ED), Washington, DC. |
| PUB DATE | 2000-00-00 |
| NOTE | 43p.; This paper is part of a set of five papers commissioned by the U.S. Department of Education as preliminary preparation for an upcoming comprehensive system-wide evaluation of the Educational Resources Information Center (ERIC). For the complete set of commissioned papers, see IR 020 296-299 and IR 020 101. |
| CONTRACT | ED-99-4268 |
| PUB TYPE | Reports - Evaluative (142) |
| EDRS PRICE | MF01/PC02 Plus Postage. |
| DESCRIPTORS | Educational Resources; *Information Dissemination; *Information Services; Information Sources; Needs Assessment; Online Systems; *Research and Development; Strategic Planning; User Needs (Information) |
| IDENTIFIERS | *ERIC |

ABSTRACT

The focus of this paper is the Educational Resources Information Center's (ERIC's) products and information dissemination. Its purpose is to collect and review existing studies and analyze information: (1) about the effectiveness and appropriateness of the array of products ERIC now produces in meeting user demands and needs; (2) about the styles, format, and types of new products it will need to meet new customer demands; and (3) about the appropriate use of different media and technologies to disseminate information more effectively and in a more timely manner. Recommended methodological strategies that might be incorporated into a large-scale evaluation of the ERIC system are presented at the end of the paper, along with suggested key questions for the areas of product success, user needs, quality and standardization, and clearinghouses and partnerships. (Author/AEF)

Reproductions supplied by EDRS are the best that can be made
from the original document.

IR

ED 437 936

# ERIC Products and Information Dissemination

*A Paper Commissioned by the U.S. Department of Education, Educational Resources Information Center*

**Iva E. Carruthers, Ph.D.**
**Northeastern Illinois University &**
**Nexus Unlimited, Inc.**
**Phone: 312-849-3999**
**E-Mail: *godiva@Nexnet2000.com***

**U.S. DEPARTMENT OF EDUCATION**
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

- This document has been reproduced as received from the person or organization originating it.
  Minor changes have been made to improve reproduction quality.
- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

This product has been funded at least in part with Federal funds from the U.S. Department of Education under contract number ED-99-4268 The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U. S. Government.

IR020299



BEST COPY AVAILABLE

## ACKNOWLEDGEMENTS

The author wishes to thank the many people who gave of their time and shared information/experiences about ERIC. I want to especially thank the clearinghouse directors for their support. Many clearinghouse directors sent me important information and/or documents that facilitated the writing of this report. Additionally, I want to give a special thanks to those clearinghouse directors who took time out of their busy schedules to participate in the Director's Survey that I developed. Their responses to the survey provided invaluable insights and data for this paper. A special thanks is also due to Dr. Larry Rudner, Director of the Clearinghouse on Assessment and Evaluation, for volunteering and cooperating with my attempt to secure some user input for this paper. The work and cooperation of the other authors will make this reflection even more meaningful. My sincere appreciation is also expressed to Dr. Robert L. Thomas for his support and oversight of this project.

Last, but certainly not least, a special thanks to my staff who provided expert clerical and a variety of technical assistance to this project.

## TABLE OF CONTENTS


I. Title Page

II. Acknowledgements

III. Table of Contents

IV. Executive Summary

V. Introduction and Statement of Purpose

VI. Framework and Methodology of Paper

VII. Effectiveness and Appropriateness of Current ERIC Products in Meeting User Needs and Demands
- A. User Needs and Demands
- B. ERIC Products: Meeting User Needs and Demands
- C. ERIC Products: Human Dynamics
- D. ERIC Products: User Satisfaction

VIII. Going Forward: Challenges and Issues
- A. Managing Product Obsolescence and Timeliness
- B. Managing Technology Change and New Product Development
- C. Funding
- D. Human Resource Utilization Through Partnering
- E. Issues of Copyright and Intellectual Property
- F. ERIC: Perception vs. Reality

IX. Going Forward: Building Upon ERIC's Strengths
- A. Subject Matter Experts
- B. Peer Collaboration
- C. Potential for Shared Product Development
- D. Costs of Success

X. Considerations for System Wide Evaluation
- A. Recommended Design and Methodologies
- B. Suggested Key Questions
  1. Product Success
  2. User Needs
  3. Quality and Standardization
  4. Clearinghouses and Partnerships

## EXECUTIVE SUMMARY

The Educational Resources Information Center (ERIC) is the world's largest and most frequently used education database. Through its mission, products, services and dissemination process, ERIC is the nation's public resource to facilitate increased capacity building to address the imperatives of educational reform and Goals 2000. This fact notwithstanding, at the dawn of the twenty-first century, ERIC faces several dilemmas or challenges that must be effectively addressed if it is to continue in its role as a *primary source* of reliable and appropriate information about education. There are disparate bodies of data that suggest that, by-and-large, the ERIC system has been successful in providing products that meet users' needs and demands. However, the system suffers from a paucity of systematic and comprehensive valuative data necessary to guide product maintenance, deletion and/or new product developments for the new millennium. To this end a comprehensive evaluation of the entire ERIC system is called for.

This paper is part of a set of five papers commissioned by the U.S. Department of Education as preliminary preparation for a comprehensive system wide evaluation of ERIC in the future. The focus of the paper is ERIC's products and information dissemination and its purpose is to collect and review existing studies and analyze information (1) about the effectiveness and appropriateness of the array of products ERIC now produces in meeting user demands and needs, (2) about the styles, format, and types of new products it will need to meet new customer demands, and (3) about the appropriate use of different media and technologies to disseminate information more effectively and in a more timely manner.

Some of the key findings of the paper include the fact that although ERIC staff have made significant progress in developing and disseminating the kinds of products and services that effectively support users' information needs and demands, it is also the case that old and new customers have rising expectations, driven, in large part, by new technologies. Thus, if ERIC is to maintain its competitive edge as a premiere educational information resource, it

must pay serious attention to the challenges and issues around new technological advances, such as issues of product obsolescence, timeliness, new product development, and customer satisfaction.

As technology has changed over ERIC's lifespan, the quality and reach of its products have been exemplary and continues to expand. ERIC has developed new initiatives (despite dwindling resources) and created new or additional products and services specifically designed for technologies such as e-mail and various Web tools. However, despite the widely acknowledged successes of these products and services, none of them are fully institutionalized within ERIC. This is the case primarily because of the tentative financial support for these products and services and the mechanisms for creating and maintaining other forward-looking products and services (Rising Expectations, 1996). A variety of data affirm that ERIC' s greatest internal asset is its people, staff, partners and contractors, and their abilities to be innovative and flexible. The decentralized structure and the availability of subject matter experts is the unique competitive edge ERIC has in place to meet the challenges for new product development and delivery mechanisms. The strengths of ERIC'S utilization of subject experts and its organizational partners are also repeatedly affirmed by the data.

Finally, the paper recommends methodological strategies that might be incorporated into a large-scale evaluation of the ERIC system. The dynamic nature of technology absolutely suggests an evaluation model that utilizes both quantitative and qualitative approaches in a traditional scientific sense. However, models more related to product marketing research and information management (e.g. data mining, trend studies, and focus groups) are also recommended. To ascertain how ERIC can best meet user demand and support public access to information and knowledge creation, some attention also must be given to an analysis of the competitive forces, private, profit and nonprofit, that are shaping the educational product development and dissemination landscape.

**ERIC Products and Information Dissemination**

Iva E. Carruthers, Ph.D.

## INTRODUCTION AND STATEMENT OF PURPOSE

We are currently in a historical period characterized by mandates for federal program accountability, national education reform, and increased competition for federal resources. It is also an era being transformed by the impact of an information technology revolution. Within this context, the National Library of Education's Educational Resources Information Center - more commonly known as ERIC, the world's premier educational database research and materials support center is a national treasure. Through its mission, products, services and dissemination process, ERIC is the nation's public resource to facilitate increased capacity building to address the imperatives of educational reform and Goals 2000. ERIC, by its very nature, is a critical national resource to foster the democratization of information and knowledge utilization in an age of technological privatization and the reality of a digital divide. ERIC's presence and contribution to American education is arguably a centerpiece to the principles and foundation of American democracy in the twenty-first century. This fact notwithstanding, as the nation moves into the twenty-first century, ERIC faces several dilemmas or challenges as a twenty-first century information service, which must be effectively addressed if it is to continue in its role as a *primary source* of reliable and appropriate information about education.

Despite its original mission, charged in the mid-1960's, as an "educational research information center" and its success with "doing more" for users with "fewer resources," paradoxically, ERIC suffers from a paucity of systematic and substantial formal evaluation and assessment of its products and services. Former ERIC Director Keith Stubbs (1999a) noted that "ERIC has requested funds for a full-scale evaluation in each of its last three budget requests, but has not yet been granted additional funds for the purpose." In FY 1999,

ERIC launched plans for a major system wide evaluation in FY 2000 by commissioning papers from five nationally known experts to frame the key issues and recommend evaluation methodologies in the key areas of: (1) Mission, Structure and Resources; (2) Database and Operational Processes; (3) Use of Technology in the ERIC System; (4) User Services; and (5) Products and Information Dissemination. This paper is in response to key area number five: Products and Information Dissemination.

The purpose of this paper is to collect and review existing studies and analyze information: (1) about the effectiveness and appropriateness of the array of products ERIC now produces in meeting user demands and needs; (2) about the styles, format, and types of new products it will need to meet new customer demands; and (3) about the appropriate use of different media and technologies - electronic, print, microfiche, web sites, virtual libraries and so forth - to disseminate information more effectively and in a timely manner. Within this framework, this paper (1) identifies indicators of ERIC's reach and successes; (2) synthesizes the disparate quantitative and qualitative data and observations about ERIC component products and dissemination process; (3) discusses critical issues that impact ERIC's current and future ability to address product and delivery needs of its users; and (4) makes specific recommendations about the kinds of issues, questions and methodological approaches which might frame implementation of a comprehensive external ERIC program evaluation in the area of products and information dissemination.

**FRAMEWORK AND METHODOLOGY OF PAPER**

The methodological approach used to develop this paper included several research strategies. The author attended a 1999 ERIC national directors' meeting that afforded an opportunity to listen to the nature of issues pending, as well as meet the parties most responsible for ERIC program implementation. Additionally, this meeting afforded an opportunity to hear first-hand some of the perceptions and challenges the Department of Education is addressing relative to Congressional and policy initiatives.

Existing studies and reports were collected and reviewed. These studies and reports included published evaluations, though limited, and a variety of published ERIC documents and internal reports. Sample publications and products from various ERIC Clearinghouses were gathered and reviewed. Moreover, several phone interviews were conducted with clearinghouse staff and institutional partners. Several ERIC reference librarians were also consulted. Discussions were held with representatives from several educational publishing companies and database consultants and selected educational and industry reports were reviewed. Lastly, a targeted survey was developed by the author and distributed to clearinghouse directors to provide an important perspective in this paper about the issues of a system wide evaluation going forward. Twelve responses, of sixteen requests, were received. In some cases, the responses reflected a collaborative response from the director and staff. A second survey developed by the author to tap user needs and concerns was posted on the Website of the ERIC Clearinghouse for Assessment and Evaluation. Unfortunately, the data received had little value in that while seven thousand (7,000) ERIC users were exposed to the survey, only thirty-nine (39) responses were noted, with only twenty-two (22) found to contain useable responses.

In short, the basis of this paper relies much on a qualitative approach to data gathering and synthesis from a range of sources. It is the author's feeling that the myriad sources of information, the scope of the information and the period over which the information spanned, adequately grounds the findings as reliable in order to achieve the assigned task of assisting ERIC in framing a plan for future system wide evaluation.

## EFFECTIVENESS AND APPROPRIATENESS OF CURRENT ERIC PRODUCTS IN MEETING USER NEEDS AND DEMANDS

By all accounts, the ERIC system is the world's largest and most frequently used education database with more than 3,000 locations around the world receiving ERIC print or database products. Approximately 900 of these maintain complete microfiche collections and

provide search services for clients. ERIC contains more than 950,000 bibliographic records of journal articles, research reports, curriculum and teaching guides, conference papers, and books. Each year approximately 33,000 new records are added. Originally, ERIC was a pioneering electronic bibliographic database and retrieval system used primarily by experts and professional researchers. However, over the past decade or more, the nature of the entire ERIC system's audience has changed greatly to a more general audience of end-users accessing the system (Smarte, 1999; Stonehill, 1992).

According to an ERIC Operations Task Force Report: *Rising Expectations: A Framework for ERIC's Future in the National Library of Education*, because of advances in CD-ROM technology and the Internet, by the mid-1990s, millions of people were using not only the ERIC database but also a wide variety of other ERIC resources - products and services - including peer-reviewed analyses and syntheses created specifically by ERIC for a diverse audience. Today, ERIC users include teachers, professors, and librarians; school and college administrators, counselors, instructional media staff, and support personnel; educational researchers, educational policymakers at every level; students and non-formal learners at every age and level, including adult learners; parents; health and social services personnel and caregivers who support families, parents, students, and children; and the media and business communities as they relate to education. In 1998, sixty percent of ERIC users were practitioners and the ERIC user base had surpassed one million contacts per year (Smarte, 1999).

**User Needs and Demands**

As reported in "*Rising Expectations,*" ERIC users' level of sophistication is increasing and, with the instant anytime, anywhere access that modern telecommunications provides, ERIC users' expectations for information products and services have risen accordingly. These expectations include users being able to access ERIC products and services at home through their Internet-connected computers and television sets, having

access to data as soon as it is produced, and at little or no cost to them. In other words, users want all of the products and services of ERIC as quickly as possible, upon request, and as complete as possible, upon demand. Moreover, users are no longer satisfied with a bibliography or a list of citations. They increasingly demand full-text documents, custom syntheses, transparent referrals to other organizations and information sources, and real-time conversations with expert problem solvers. Responding to a 1999 Survey of Clearinghouse Directors conducted by the author (hereafter referred to as the Carruthers Survey--See Attachment 1), one ERIC Director said,

> Users are no longer content to be pointed in a direction toward information that may be of use, but rather they want to be sent copies of--or directed to Internet resources that summarize--the response to their question and package it so that they don't have to do any primary research themselves (Carruthers Survey, Respondent 2).

Most Directors responding to the Carruthers Survey agreed that the greatest user demands today are for information that is web-based and full-text or that is "digested and processed" so that users do not have to do anything but incorporate it into their project or assignment. Addressing this issue of user demands a Director observed:

> The current trend is to seek an answer to a particular question... Users in the past tended to be older college students or graduate students. Today, we are seeing younger users who ask for a completed final product. They do not usually ask for leads or research to be able to complete their work (Carruthers Survey, Respondent 3)

These observations are consistent throughout studies and other forms of information about ERIC. ERIC users increasingly want to receive information in electronic format. Many of the ERIC Directors point to a trend of users ordering more items over the web and using e-mail as their primary vehicle for communication. Thus, the issues of technological change, full-text availability, and database currency are seen by many as crucial to the survival of the ERIC system. "Neither new nor traditional users will be satisfied with anything less than

this. There are too many other alternatives to ERIC available today" (Carruthers Survey, Respondent 5).

In today's world, people endeavor to become lifelong learners, improve education in their communities, and act with a greater understanding of educational issues. Although is has been difficult to capture with one hundred percent certainty, there is substantial demographic data on the thousands of users who send e-mail requests, visit ERIC exhibits at conferences, search the ERIC database, or obtain ERIC information via the Internet. According to the 1999 ERIC Annual Report, in 1998, ERIC Clearinghouses and components responded to 89,036 e-mail messages from users, 50,729 telephone calls, 34,733 letters, and 6,480 visits. In this highly dynamic environment, ERIC must be prepared to meet the rising expectations of current and future users. In order to effectively and efficiently meet user needs and demands, the ERIC system will need to develop and implement a cycle of research, evaluation, and change in its products and services for educators (Rising Expectations, 1996; Stubbs, 1999b).

**ERIC Products: Meeting User Needs and Demands**

It stands to reason that hand-in-hand with reaching a widening and increasingly diverse audience of users is the need to provide the appropriate products as effectively and efficiently as possible that meet user needs and demands. The ERIC Clearinghouses create and produce a wide range of products in response to user needs and demands. Clearinghouses analyze and synthesize literature in their respective areas of expertise, create research reviews, bibliographies, state-of-the-art studies, interpretive studies of high-interest topics, digests, and a number of other publications that meet the information needs of the wide spectrum of ERIC users. More specifically, based upon a review of the document: *All About ERIC* (1998), current ERIC publications and products by title and brief description include:

**Clearinghouse Publications** - Each year, the clearinghouses produce about 250 publications, some aimed at specific audiences such as teachers and administrators, others are aimed at the traditional research audience. These products include flyers and brochures aimed at introducing the public to ERIC and the clearinghouse services, annotated bibliographies, books, newsletters, publication lists, search reprints, information bulletins, hot topics and/or occasional papers, and ERIC Information Analysis Product (IAP).

**ERIC Digests** - Approximately 160 ERIC Digests are produced by clearinghouses each year. These two-page research syntheses provide brief overviews of current education issues. Significantly, Digest topics are determined by-and-large by the questions most frequently asked of the 16 subject-oriented ERIC Clearinghouses. Digests are often in a question-and-answer format and always include a list of additional resources.

**The ERIC Review** - The *ERIC Review* is a free journal that reports on critical trends and issues in education as well as new ERIC developments. It is distributed to more than 25,000 subscribers and to targeted audiences interested in each issue's particular topic or theme. Copies are also distributed at education-related conferences and meetings and are mailed to individuals and groups that request them. Past issues of the Review have focused topics such as school-to-work transition, K-12 computer networking, information dissemination, inclusive schools, and the path to college.

**Parent Brochures** - In keeping pace for demands from parents and other interested users for information on the role of parents in their children's education, ACCESS ERIC, in collaboration with ERIC Clearinghouses and their networks of experts, produce this series of "easy-to-read" brochures for parents. Each year a list of new Parent Brochure titles are sent to more than 9,000 parents, parent educators, counselors, and other interested individuals. Parent Brochures always include a list of organizations and publications that can provide the user with further information on the topics.

**Products About ERIC** - In addition to ***All About ERIC***, ERIC produces an array of products designed to introduce individuals and organizations to the resources of the ERIC system and to assist them in their search for relevant and usable education information. These products include:

> ***A Pocket Guide to Eric*** - a pocket-sized booklet that provides a brief description of the ERIC system and its products and services.
>
> ***ERIC User's Interchange*** - a newsletter for librarians and ERIC resource collection providers that is published semiannually and covers information on new ERIC products and services.
>
> ***ERIC In Action*** - a 15-minute video that describes the basic structure of the ERIC system, major benefits the system offers to users, key features of the ERIC database, and information about how to locate materials of interest.

***ERIC Transparencies*** - consists of a set of 48-paper transparency masters that includes information on what ERIC Clearinghouses do, how documents are selected for the ERIC database, search strategy development, AskERIC, online ERIC document delivery, and many other topics.

In addition to these products, the ERIC Processing and Reference Facility produces a number of system wide support products such as processing manuals, bibliographies, indexes, directories and Ready References, a brief handout that contains ERIC database-related information that users need. Other publications include: *The Educational Resources Information Center (ERIC): An Annotated Bibliography of Documents and Journal Articles About ERIC*, the ERIC *Title Index*, and the ERIC *Identifier Authority List*. Further, ACCESS ERIC produces several reference and referral publications which are accessible online. These products include: the *Catalog of ERIC Clearinghouse Publications*, a guide to more than 1,400 free or low-cost education titles published by ERIC Clearinghouses; *Directory of ERIC Resource Collections*, a directory of over 1,000 libraries and other organizations that offer access to the ERIC database, microfiche, and ERIC publications; *ERIC Directory of Education-Related Information Centers*, a directory which describes 450 resource centers and agencies that provide information or assistance in education-related areas; and the *ERIC Calendar of Education-Related Conferences*, a guide to over 525 international, national, and regional education conferences (All About ERIC, 1998).

**ERIC Products: Human Dynamics**

It is clear that ERIC staff are committed to responding to user needs and demands as effectively as possible and that they engage in a wide range of activities dedicated to this end. In fact, the dedication, commitment, and expertise of ERIC Clearinghouse staff are cited repeatedly as among ERIC's greatest strengths. One respondent in the Carruthers Survey noted that "the different clearinghouses work with wonderful and talented people who trust

ERIC's reputation and in turn produce excellent Digests, major publications, and other products" (Carruthers Survey, Respondent 3).

In 1998, ERIC Clearinghouses produced more than 660 information products. Of note is the collaborative ways in which these products are produced, the extensive networks through which they are distributed, and the wide attention they receive and appeal they have among users. A number of ERIC publications are produced in partnership between ERIC Clearinghouses and academic institutions, professional associations, private publishers, and other organizations (Smarte, 1999). Never content to rest on their past reputation and successes, ERIC staff constantly work together to come up with new ways to respond to current and potential user information wants and needs. In this context, the many special projects that the system proposes to the ERIC Program office (e.g. AskERIC, National Parent Information Network) often end up being ERIC's greatest success stories and they manage to keep ERIC evolving in response to changing user requirements and expectations (Carruthers Survey, Respondent 2).

Moreover, ERIC's increased use of electronic formats to disseminate its information is an example of the system's ongoing efforts to provide appropriate mechanisms through which users can access ERIC products and subject matter experts. ERIC is making excellent use of the Internet to answer questions and disseminate its data. The Web allows ERIC staff to disseminate information quickly and very efficiently to a great number of people. In this context, a respondent in the Carruthers Survey points to ERIC's Web presence as one of its greatest strengths:

> One of its greatest strengths...obviously disseminating via the Internet as one look at the statistics will show. ERIC use is at an all-time high and this directly correlates to Internet access to full-text ERIC products and free database searching... A forthcoming book on the second fifteen years of ERIC, being published by EDRS, will suggest that much of the ERIC system feels that synthesized products are also helping to make ERIC more widely recognized and respected in the education field. Products such as ERIC Digests, Trends and Issues

> Papers, and Parent Brochures are being produced in response to user requests for synthesized information (Carruthers Survey, Respondent 2).

There is near consensus among ERIC staff that the system's Internet-centric strategies strengthen considerably its capacity to effectively address user needs and demands and in a more timely manner. As an ERIC staff member noted:

> They strengthen ERIC's response to its user community by providing access to collections of resources that are currently unavailable to many educators because of cost, location, and technology restrictions. Clearinghouse Web sites provide links to primary sources of state, national, and international information. The sources can be as diverse as original handwritten texts of speeches made by national and international leaders to drawings of historic buildings and locations, to great works of art and musical scores of renowned composers (Carruthers Survey, Respondent 5).

Some staff note that ERIC's use of the Web enhances its capacity to reach and provide services and products to people who otherwise would not have access to ERIC (e.g. persons with special needs, rural, remote locations and/or foreign). ERIC has always been on the leading edge in using the Internet for information dissemination, however, some ERIC staff have noted that Internet access, in and of itself, does not differentiate ERIC or keep it more viable. Rather it simply puts the system on the same level as other services and industries.

Finally, an important ERIC function is the development of outreach activities that are designed to attract new users to ERIC and to update experienced users on the latest ERIC products and services. These outreach efforts include exhibits and presentations at education-related conferences. For example, in 1998, ERIC staff members participated in more than 470 conferences, meetings, and workshops; gave more than 230 presentations; and staffed exhibits at more than 80 major conferences (Smarte, 1999). On the road, ERIC staff solicits feedback on various ERIC products that are, in turn, incorporated into continuous efforts to update and/or redesign products to meet user needs and demands.

**ERIC Products: User Satisfaction**

Although the need for a full-scale, system wide and independent assessment of ERIC products and services as well as user need, demands and satisfaction continues to be paramount, we can nonetheless, learn much about the effectiveness and appropriateness of ERIC products in meeting user needs and demands from the feedback ERIC staff members receive on the road and from Customer User Surveys. Customer feedback and survey results have driven important changes, large and small, in clearinghouse operations and have set the stage for a system wide evaluation of ERIC, the results of which are expected to significantly guide ERIC's work in the new millennium (Smarte, 1999).

As the U.S. Department of Education and other federal agencies look closer and closer at accountability in federal programs an increased emphasis has been placed on evaluating the impact of programs such as ERIC. Beginning in January 1999, new five-year contracts required each ERIC Clearinghouse to regularly gather data/feedback regarding customer satisfaction with its products, services, and how its work contributes to improving education. In order to meet this requirement, the clearinghouses will conduct annual surveys using a customer satisfaction survey instrument that was approved by the Office of Management and Budget (OMB) for use by all National Library of Education Programs (NLE).

Based on the data reviewed for this paper, it is clear that ERIC staff have always worked hard to meet user needs and demands and, over the years, they have made significant progress in developing and disseminating the kinds of products and services that effectively support users' information needs and demands. In this regard, ERIC has an outstanding track record for customer satisfaction. Each year ERIC receives hundreds of thank-you messages that provide anecdotal evidence of ERIC's usefulness to a variety of education stakeholders. Historically, ERIC components have also used formal approaches to gather information on who uses ERIC, how they use it, and their level of satisfaction with ERIC products and

services (Smarte, 1999). However, a caveat is necessary here. It should be noted that clearinghouses have generally not been able to measure the benefit of their products and services in any quantitative or comprehensive manner. The anecdotal data is usually from those users who are well pleased with the products. Additionally, survey data, to date, generally does not get at all of the key questions necessary to a systematic assessment of the overall system.

The aforementioned caveat notwithstanding, the results of various user surveys conducted during the 1990s indicate that customer satisfaction with various ERIC products is quite high. For example, a 1994 survey reflected a 95 percent rate of user satisfaction with the speed of response; an 88 percent satisfaction rate with the quality of response; and 97 percent indicated that they would recommend the service. These findings are consistent with the results of various surveys conducted in 1998. An analysis of 600 questions received from parents in response to a Newsweek article featuring the National Parent Information Network (NPIN)--a special project of the ERIC Clearinghouse on Elementary and Early Childhood Education (ERIC/PS) and the ERIC Clearinghouse on Urban Education--conducted by ERIC/PS found that of the parents surveyed, most were pleased with the service NPIN provides and 89 percent of these parents rated the materials they received as useful, particularly those written specifically for them. In addition, more than 70 percent indicated that they felt more comfortable in their role as parents as a result of the information they received and more than 65 percent indicated that NPIN saved them "time and effort in obtaining information." In 1997, the NPIN site was visited in excess of one and one-half million times, which is a testament to its popularity and usefulness (Smarte, 1999).

Likewise, there seems to be a general consensus about the popularity and usefulness of AskERIC. Although the AskERIC Q & A service is not a product per se, the comprehensive responses provided by AskERIC staff to individual users is certainly one of ERIC's great strengths in terms of giving ERIC worldwide recognition and visibility

(Carruthers Survey, Respondent 1). Since its appearance in 1992, AskERIC has greatly increased the visibility of the system. In 1998, an AskERIC user survey found that 92 percent of the 196 users (a 31 percent response rate) who responded to questions about the value and quality of AskERIC reported that the information they received was relevant to their question and 93 percent said that they would recommend the service to someone else. The respondents also indicated that AskERIC had saved them either time (91 percent) or money (48 percent) (Smarte, 1999).

Other ERIC products as well are popular and receive high praise from users. For example, the Parent Brochures are highly popular with the public as are the ERIC Digests. Both publications are good examples of ERIC's ongoing efforts to provide appropriate products to its public--products that users need and demand. Given the high demand for synthesized information, the ERIC Digests have grown continuously in terms of demand for and use. Users of the ERIC Digests typically say that they think very highly of the Digests and use them frequently. One staff member is quoted in an ERIC History Manuscript as saying that "the ERIC Digests are by far the most popular item of the system. People know (the) Digests and they love them....It's made information more accessible to more people" (quoted in Colker, 1999). The ERIC Review, which debuted in 1990, is often cited for its quality. The large and growing number of subscribers provides some indication that it is meeting user needs fairly effectively. In 1998 alone, nearly 1,000 new subscribers signed up to receive a copy of the ERIC Review. Along these lines, a survey of readers of NCLEnotes, the newsletter of the Adjunct Clearinghouse for ESL Literacy Education, revealed that an average of 6 people read each copy of the newsletter, thus a distribution of 6,500 copies actually reaches approximately 39,000 people.

From an internal perspective, ERIC is a network of educational related resources, people, products and services, delivered by a decentralized infrastructure consisting of a combination of various subject matter experts and technology support. To the customer,

however, ERIC is more of an infinite repository of information, including databases, free or low-cost products and publications, information retrieval, referral services, and subject-matter experts. Although surveys, anecdotal and other data show that ERIC users are satisfied by-and-large with the products that the system offers, it is clear that ERIC has not yet satisfied customers' needs for full-text delivery. For example, in a survey conducted by the ERIC Clearinghouse on Elementary and Early Childhood Education (1999), a typical sentiment among users is expressed in the following quote:

> Any changes you would make to include more full-text journal articles would be a great improvement...students appreciate being able to leave the computer with their articles in hand, rather than having to check our online catalog and then check the shelves and then photocopy or check out heavy bound volumes of periodicals from the library (quoted in Rothenberg, 1999, p. 6).

The majority of the data reviewed for this paper also shows quite clearly that most users are not content with the system's present incapacity to provide comprehensive coverage of education-related materials (in essence, to be a national catalog of all key education resources in all formats) and would like to see this function greatly expanded. In general terms, although based on small sample responses, two primary areas of customer concern identified by ERIC staff are (1) the content of the database and, (2) the availability of the items described in the database (See for example, Rothenberg, 1999).

An in-depth analysis of an array of internal documents distributed among and between ERIC staff, show quite clearly that staff are consistent and unified in their belief that the system must embrace and promote a cycle of evaluation that effectively taps into user current and changing needs and concerns as well as their overall satisfaction with ERIC products. The potential for ERIC to document its successes, user satisfaction with its products and services, maintain current users and reach new audiences, will require a more relational posture with its users. Motivating users to participate in product assessment and evaluation is essential but not an easy task. By all accounts, however, ERIC is committed to

building for the future based on user input. ERIC staff has always engaged its customers in this process and they have effectively used this input to fashion and/or redesign various products consistent with users' needs and concerns. This process of soliciting and incorporating user input into the process of product development, maintenance, and redesign, will surely continue in an even more formal and systematic manner, given that clearinghouses are now required to conduct an annual survey of users regarding their satisfaction with and use of various ERIC products and services. In this regard, some ERIC staff have suggested that their "evaluation efforts need to be as directed towards monitoring how *we* are doing as *we* go along as to summative evaluation where *we* examine what *we* have or have not accomplished." (Topics for Discussion, 1999: p. 1).

**GOING FORWARD: CHALLENGES AND ISSUES**

A major industry paradigm shift in marketing and providing most educational products and services has taken place. Product appropriateness and effectiveness are increasingly being determined by both the quality of services and their delivery. And increasingly, services and service delivery are construed as products. A seamless continuum of product options, content, format and type, is being driven by technological access, creating increased demand for Web-based products and services. Over the past 30 plus years, ERIC has demonstrated unmatched capacity to persevere and flourish as an international resource, with an increasingly diverse user community, a myriad of products and multiple points of dissemination. To meet future user needs and demands in a growing and increasingly competitive environment staff will need to continue to be as resilient. As ERIC Directors and staff move forward in the new millennium and consider what need to be done to sustain and increase ERIC's capacities and capabilities in order to remain a "world class act," activities must include serious attention to the challenges and issues around new technological advances, issues of product obsolescence, timeliness, new product development, and customer satisfaction.

**Managing Product Obsolescence and Timeliness**

Clearly, there is a need for ERIC to manage product change and obsolescence. However, phasing out obsolete products and mechanisms for the dissemination of information in a timely manner will be a challenge. As far back as 1987, Distinguished Professor of Higher Education, Kenneth Tollett cautioned that "any significant change in the structure, organization, or operation of ERIC should be approached with great circumspection and care." (quoted in Colker, 1999: p. 3).

As our earlier discussion suggests, the styles, format, and types of most of ERIC's current products are generally viewed by ERIC staff and its users as effective and appropriate. However, as the world of technology and telecommunications continue to change, so too must the style, format, and types of some of ERIC's products as well as its use of different media technologies in order to meet new customer demands. In response to a question in the Carruthers Survey that asked if information was as accessible from ERIC as it could be, several respondents pointed out that not all information in the ERIC database is as accessible as it could be. These respondents firmly believe that everything ERIC has on microfilm or microfiche should be available on the Internet as well. The obsolescence of microfiche as a storage medium is an issue that crops up time and again in ERIC staff and users' observations and comments. Most sources that address the future of ERIC view microfiche not only as outdated but also as difficult to use. In the Carruthers Survey, several Clearinghouse Directors identified microfiche as one of ERIC's greatest weaknesses. For example, according to one Director:

> It locks us not only into a place-based information world, but also a print-based world...We are a distributed network of expertise that has to fit into a one-place bottleneck (the Facility) for editing and entry...The clearinghouse structure And the Internet are the strong parts of ERIC...the future. The Facility and microfiche are our 60's legacy. They are Quickly becoming the chains that bind our progress (Carruthers Survey, Respondent 11).

Another key issue that is repeatedly described as a problem by both ERIC staff and its users is *timeliness*--the delay in processing CIJE (journal literature) records. The current processing method results in, at least, a six-month delay before the records appear in the ERIC database. By the time new records appear in the database many of them are already out-of-date. This delay in database processing is added to what some see as an already extremely late (slow) database processing timetable. In suggesting how to improve the efficiency and speed with which materials are prepared for and entered into the ERIC database and made available to ERIC users, a work flow analysis is recommeded as a system wide strategy. This recommendation addresses a repeated concern expressed by ERIC staff that staff reorganization vis-à-vis technology deployment at the Facility may be required (see, for example, Input on Draft Questions..., 1999).

Some sources speaking about the issue of timeliness note that delays can also be related to the need to obtain releases for documents. Although the reproduction release is online, some ERIC staff believe that some form of electronic signature approval or authorization would help speed up the process. (Input on Draft Questions..., 1999, Respondent A). And, in some cases, delays can also be seen in the fact that materials contained in the World Wide Web database are a month behind the quarterly CD-ROMs. One respondent providing input to *"Draft Questions about the ERIC Facility Recompete"* questioned whether there is a possibility that either implicit or explicit arrangements give vendors an advantage (Input on Draft Questions..., 1999, Respondent C). Finally, some observers suggest that timeliness is both a virtue and a weakness of ERIC. While ERIC Clearinghouse staff are very current (timely) on their subject area and current educational issues generally, the database itself is not current enough (slow).

**Managing Technology Change and New Product Development**

Managing obsolescence and timeliness is directly linked to new product development procedures. The following three cases exemplify this point.

> In 1987, an ERIC partnership with Silver Platter led to the first CD-ROM vendor partnership. Later DIALOG and OCLC would join ERIC as CD-ROM vendors. In 1995, ERIC made arrangements with the National Information Services Corporation (NISC) to buy and distribute their product at cost to the educational community. The ERIC CD-ROM collection is now widely distributed. However, CD-ROM technology is becoming obsolete among both the user and producer communities.
>
> The UMI Full Text Pilot Project of 1991 was a different story. In this pilot, a dedicated workstation was required to access a full text CD-ROM. The result was that the cost was prohibitive to the targeted market. This project did not succeed. According to Bob Stonehill: "...we had the right idea, it was just a decade ahead.."
>
> The more recent failed relationship between America OnLine (AOL) and ACCESS ERIC may be more reflective of AOL' s lack of vision about the education market and/or its internal capacity. However, an observation about this failed partnership may be that it highlights problem areas that could impact future relationships between public and private partners. Such issues as interoperability, copyright and royalty compensations, leadership and corporate ownership changes are all implicit in the ACCESS ERIC AOL venture (Colker, 1999, p. 138).

These examples of joint venture with the private sector underscore the necessity for managing the technology curve. Some of it is luck; but most of it is having a knowledge of your user community's needs and capacities, where the technology industry is going, and making the decision o f where to put limited resources with what anticipated gain.

There is little doubt that new technologies, particularly the Internet, have had a dramatic impact on the both the expectations and needs of ERIC users. ERIC has been a leader in using the Internet for information dissemination and should be proud of its leadership role on the Internet as other organizations have noted (Lankes, 1999). As a history of ERIC reveals, it has always been able to adapt its product mix to technological changes:

from film to microfiche to OCR to CD-ROM to internet-centric and some full-text delivery. Thus, it is very important to focus on technology as a delivery system and not as a product.

ERIC's history of leadership and current role in utilizing technologies to deliver/ disseminate its products notwithstanding, survey data indicate that many of its customers are not content with the system's current-level use of the Internet. This holds true for various ERIC staff as well. Many ERIC stakeholders indicate that in shaping the future of ERIC products, the system must move from a paper to an electronic world perspective. For example, according to Richard Stroup (1999), ERIC's current perspective is overwhelmingly and inappropriately paper oriented. In the future ERIC must move to Web-based versions of several of its products such as the Source Index, the ERIC Processing Manual, the ERIC Thesaurus, the Identifier List, the ERIC Acquisitions Arrangements List, and the Title Index. Most ERIC staff and others seem to agree with Stroup's observations indicating that the paper versions of these products are bulky, expensive, and as Stroup observed: "horribly inefficient to use." (p. 1).

In general, ERIC staff believes that continuing with print-based activities results in a limited database which reduces the usefulness of the ERIC system for users. Not all stakeholders agree, however, that the answer is to get rid of all print resources. For example, while acknowledging that the mass of education information no longer consists primarily of journal articles and printed reports, a customer quoted in a 1999 report on *Responses to the Rising Expectations" Report*, said:

> While it is clear that there are loads of other no-print resources available to the education information consumer, print resources continue to provide the primary reputable, peer-reviewed source of research information on education issues. This focus is essential if ERIC is to continue to maintain its importance to those of us who need access to research-based information (quoted in Rothenberg, 1999, p.3).

Among those users who provide input to ERIC staff regarding their information needs, almost universally these customers want products such as full-text articles on the Web. Most users would like to have such products at no cost to them, although some them indicate that they would not mind paying a small fee. Furthermore, in response to a question that asked if ERIC was as accessible to users as it could be, several participants in the Carruthers Survey felt that it was not as accessible as it could be precisely because full-text documents are not easily accessible through the Internet. Several respondents related the issue of access to the need for clearinghouse standardization, one of whom articulated it as follows:

> Access to the ERIC database needs standardization. Currently, There are at least 3 CD-ROM producers, each with a unique Record format, with unique field names, and with unique search parameters. In addition, clearinghouses have mounted the database on their Web sites, again each using different search engines. This variety of interfaces results in a confusing number of record structures and field names. Another access problem occurs when specific information is easily retrieved using one version of the ERIC database while using another version makes retrieval of the same information impossible or extremely difficult. Also, some Web site versions of the database provide access to current records. Other Web sites provide access to the entire database. (Carruthers Survey, Respondent 5).

These issues notwithstanding, decisions about product obsolescence and new product development must consider the latent audience that may or may not have access to the technology. The other side of putting everything on the Internet is the issue of the "digital divide." Not everyone has access to the Internet. Even as ERIC responds to new technologies and develops new products within the context of these technologies, it must make sure that its information continues to be accessible to as broad a user audience as possible, including those people who do not have access to the Internet. One ERIC staff member put it very succinctly:

> As long as there continue to be low-tech schools and teachers without Internet access on a daily basis whether from work or home, ERIC must continue to offer other means of accessing its information than just the Internet. However, for those who

> do have Internet access, ERIC has the potential to expand its audience base. Of course, this continued audience expansion via the Internet creates a dilemma. The more people that access ERIC without additional funding available to ERIC components to beef up their Internet sites and keep them current, the more people may not be pleased with the level of products or services they receive (Carruthers Survey, Respondent 2).

A number of other issues related to technology and the direction for new product development can be culled from the data. Some of the most frequently cited include:

- ERIC must continue to support and not compromise its products and services to people with special needs
- Provide more products, in more formats, that synthesize, interpret, and add value to existing resources.
- Give greater attention to teaching and tutorials to provide users of ERIC with searching and analysis skills rather than information and answers.
- Maintain a high level of products and services as well as expand and develop new products.
- ERIC is impaired by a low-level of funding.
- ERIC is impaired by limited resources and an aging operations framework.
- Provide delivery of digital products (e.g. software, images, data sets).
- Provide organizational schema, descriptions of Web sites related to education.
- Develop/enter into collaborative relationships to assure easy journal article delivery.

Responses to ERIC customer surveys also reveal the need for more user training, especially to help people get the best search results from the ERIC database and understand how to use the results. For example in 1998, researchers concluded that ERIC users are conducting poor searches and are accepting one or two somewhat relevant hits rather than conducting thorough searches to locate the best citations. ERIC is already addressing this issue by adding more *"smart"* features to its database search engines and by expanding online search tutorials. These and other data from users inform staff as to whether or not current products

produced by ERIC are the right ones; how well they work for users and what their specific benefits are; and which products should be discontinued and which are needed in the future. These insights are vital to future product development activities as they provide clear direction for the "new" ERIC—an ERIC that can meet the needs of users in the twenty-first century.

In sum, what emerges from most of the data about ERIC products and services is that as technology has changed over ERIC's lifespan, the quality and reach of its work products has been exemplary and continues to expand. ERIC has developed new initiatives (despite dwindling resources) and created new or additional products and services specifically designed for technologies such as e-mail and various Web tools. These include: AskERIC, NPIN, ERIC Test Locator and related systems, low-cost CD-ROMs, full-text digitization of ERIC documents, and ERIC's "smart" search engines on the Web. However, despite the widely acknowledged successes of these products and services, none of them are fully institutionalized within ERIC. This is the case primarily because of the tentative financial support for these products and services and the mechanisms for creating and maintaining other forward-looking products and services (Rising Expectations, 1996).

While there is still much work to be done in terms of keeping up with customers' rising expectations, particularly as they are linked to the issue of the Internet, in this era of extended collaboration, knowledge and resource sharing among the various components of ERIC must continue. This process of collaboration must impact all production and distribution tasks. Moreover, a delicate balance and sensitivity to ERIC as both an archival and living database must be maintained. In planning the demise of old products and the development of new ones, the recognition that ERIC can both help to close the gap or contribute to the digital divide is critical.

**Funding**

Funding has always been an issue for ERIC. Authors of the "*Rising Expectations*" Report point out that one of the two major dilemmas that compromise ERIC's continued ability to deliver what customers expect is its history of dwindling resources, particularly funding. For example, while per-pupil expenditures have *doubled* and federal education expenditures have quadrupled (in constant dollars) over the last 30 plus years, ERIC's resources have been cut by 80 percent. The paradox here is that over the years, ERIC has become excellent by doing more with less. The system has a record of remarkable efficiency despite the lack of appropriate funding and other resources, leveraging at least ten times its own resources. The various clearinghouses, such as the Clearinghouse on Educational Management, have long labored to use their limited resources to maintain existing services and also go where the majority of their users have gone: the Internet (Smith, 2000). However, as the *"Rising Expectations"* Report suggests, such success could also be ERIC's undoing because without substantial increases in resources, staff will not be able to respond to the rising expectations of customers at their high level of performance of the past. Bottom line, in the future, ERIC will not be able to continue its record of doing more with less. In fact, the ERIC Operations Task Force predicts that ERIC will indeed do less and less well with level funding.

The issue of funding is a major concern among Directors and staff across all sixteen ERIC clearinghouses. When asked in the Carruthers Survey to identify ERIC's greatest weaknesses and threats, respondents overwhelmingly cited *"limited funding" "low-level funding" "insufficient funding" "no targeted funding for research and development or new systems."* The remarks of one respondent is typical of those made by most respondents relative to the issue of funding and ERIC's future:

> Without increased funding, ERIC cannot serve the next generation of educators, parents, policy makers and students in the manner that fits the expectations of those

users and in the tradition of ERIC. (Carruthers Survey, Respondent 5).

The general consensus is that limited or no growth in federal funding makes it extremely difficult to improve the system and in many ways, suggests limited support from the Department of Education. In this context, active and appropriate advocacy for ERIC within the Department of Education and Congress is suggested.

**Human Resource Utilization Through Partnering**

Many stakeholders suggest that ERIC's longevity has been due specifically to its ability to attract and sustain some 650+ mutually beneficial private partnerships, resulting in innovative ways to leverage funds and in-kind resources. The role of university and professional organizations cannot be minimized in this regard. Likewise, long-standing relationships with EDRS, Oryx press, and Dialog are a few examples of such relationships involving the corporate sector. Finding common ground around issues of exchange, i.e. intellectual property and costs for development and dissemination has not been easy. "Of the $136M researchers estimated that it cost to operate the ERIC system, only $5.6M was underwritten by the federal government" (Colker, 1999, p. 36). This kind of return on investment should not go unnoticed. This strength of leveraging resources, in conformity with appropriate technical advances and interfaces, may define the new ERIC products.

In an interesting discussion of *Adjunct, Affiliates and Partners: Building an ERIC Network for the 21st Century*, R. David Lankes (1999), Director of ERIC Clearinghouse on Information and Technology, suggests that recent events have prompted ERIC to question how the system interfaces with partners and other organizations in general. According to Lankes, currently, there does not appear to be a shared definition of partners and adjunct. Added to this problem is the advance of the Internet that has had the tendency to blur traditional scope boundaries. Lankes looks at new partners and redefines existing ones in terms of what he views as the "evolving ERIC database. In brief, he believes that ERIC's

future is through partnerships; partners are essential to ERIC better utilizing its limited resources. In this context he concludes:

> ERIC's mission and audience have outgrown its government supplied resources and it will only get worse regardless of administration...In order...to continue to excel, it must build on its greatest strength, distribution. ERIC must extend its concept of itself as a virtual organization and create strong linkages with strong partners...In this way, ERIC cannot only provide more and better services to its users, it will become an essential part of more and more organizations...ERIC has the potential to lead in extending its influence through partnership. We are already headed in this direction, but we must do so continuously and cautiously. (Lankes, 1999, p.7)

Lankes discussion highlights how key a consideration of partnerships is in any evaluation of ERIC, whether system wide or clearinghouse specific.

**Issues of Copyright and Intellectual Properties**

ERIC clearinghouses have been able to adhere to copyright and fee guidelines however, they do not control these guidelines and today's environment poses some new challenges. In this marketplace, with the privatization of and profiteering from both the Internet and education growing at a fast pace, issues of ownership, supply and demand, present different constraints and guidelines for cataloguing and utilizing information. Parties with interest in the library, computer, and publishing markets potentially intersect with ERIC's mission. By way of example, they include Educational Research Services, NetSchools, and Scholastica. Thus, the way in which ERIC incorporates policies and technologies to document, link, and/or interface to other properties/products must be carefully considered, particularly as ERIC begins to consider the incorporation of video and multi-media materials into the scope of its products.

The multimedia and Internet-centric environment of document production and dissemination have created a highly dynamic environment over issues of copyright and intellectual properties. ERIC, as the largest educational database in the world, in a time when industry is reawakening to the potential profitability of educational and multi-media materials

development, will have to chart new territory. The U.S. Advisory Council on the use of National Information Infrastructure cautions:

> The use of the National Information Infrastructure poses new legal and practical challenges in balancing the interests of owners and users of copyrighted works in a changing technological environment, ensuring an adequate level of protection to encourage owners to make their works available on the NII while permitting appropriate access to those works. (U.S. Advisory Council on NII, p. 12)

Without question, the issues of control and compensation over intellectual and creative properties, in a global network environment, bring new players with new interests to the environment. The edutainment/information corporate mega mergers can signal possibilities for partnership and/or possibilities for displacement. Recognizing the legislative limitations upon clearinghouses to assess royalty and fee charges, Stonehill indicated that ERIC was pursuing options by which reasonable usage fees can be collected from online vendors (Stonehill, 1992: p. 5). According to Nelson Heller (1993):

> For publishers of on-line databased and other electronic reference products, the Internet represents both a threat and an opportunity The threat: copied files conceivably can be distributed to thousands of computers around the world in minutes...accessed by any user. The opportunity: the Internet is gradually being converted from a "free government subsidized service to a fee-based commercial service, creating a new distribution channel...this has special significance for education...(Heller, p 4)

The reality is that more and more conference presentations will be utilizing technology where only salient points are spoken to using presentation applications and, in some cases, where just in time delivery, including translation documents are available at the conference site. Additionally, as one respondent to the Frameworks Survey noted:

> Many organizations, including ASHA, depend on revenues from the sale of publications, including journals and journal reprints. Having those available free to people who are not members of our organization, when our members do not get such free would have serious financial consequences (quoted in Rothenberg, p. 6).

In setting out new goals for OCLC, K. Wayne Smith, President, noted that the addition of educational services for the library and education communities is a priority. "Technological advances are bringing both new opportunities and problems. The old paradigms are giving way to new ones. But with all this change membership values of cooperation, sharing and working together for the public good clearly remains more vital and compelling than ever. (Strategic Plan Letter, 1997).

Thus, in this new environment, a partner can easily and concurrently be a competitor. The implication for ERIC's future funding and leveraging of its human and fiscal resources is at the heart of effectively allocating resources to meet user demands. In raising the question of ERIC's future role in indexing, Stonehill (1992) highlights one of the areas that ERIC must look at in terms of being able to best leverage its human resources. Phyllis Steckler at Oryz Press suggest that abstracting and indexing can now be done electronically and resources for those functions deployed to dissemination. (Colker, p. 185) The views of Smith and Steckler point to some major envisioning of how twenty-first century ERIC staffers spend time and dollars. Without diligent and proactive marketing of ERIC to old supporters and new audiences, Director Larry Rudner's observation is telling. According to Rudner, who is a strong voice to Congressional Staffers on behalf of ERIC:

> While we are extremely well known in education and library science, we are virtually unknown outside of those fields. We don't make headlines..we are service people at the grass roots level. If we don't raise awareness there is a good possibility of our being killed without, Congress even knowing that they are killing us.
> (quoted in Colker, p. 140)

**ERIC: Perception vs. Reality**

Rudner's observation raises the question of perception, perception, perception. The anecdotal data suggest that there are some critical issues of perception that need to be

addressed. One Clearinghouse Director noted that "Even the Department of Education does not seem to value or know about the comprehensive reach and service that ERIC provides. ERIC is perceived as a research tool for those with formal training" (Colker, 1999). Robert Stonehill (1992) identified several myths about ERIC that seem important to any future evaluation of ERIC; several have relevance to issues of future products and information dissemination. For example: ERIC is just a database; No one will buy documents from a publisher if they are available through ERIC; ERIC is not well-known to teachers or administrators, nor are ERIC products particularly useful to them. This last myth or misperception exemplifies the need for positive and effective marketing of ERIC to close the gap between myth and reality. The reality is, according to a New York Times report, that ERIC is the second most cited Internet site among Internet-using K-12 teachers. Further, the ESEA Prospectus (1999) indicated that Title 1 principals gave higher ratings to ERIC than to any other federal source of technical assistance. (Stubbs, 1999c).

**GOING FORWARD: BUILDING UPON ERIC'S STRENGTHS**

The quality of ERIC products has consistently resided in the accountability and quality assurance processes inherent in a strong participatory professional collaboration, including use of subject matter experts and peer reviews and collaboration. Although there is an awareness and recognition of the seriousness of ERIC's weaknesses, obstacles and threats, there is an overwhelming consensus that ERIC's strengths are the foundation of its longevity and are the key to its future. Some of the strengths identified by ERIC Directors and/or their staff in the Carruthers Survey are instructive in this regard. The following represent only a sampling:

- Access to the ERIC database is available in a variety of formats
- ERIC is an established service
- ERIC's reputation for quality

- ERIC's talented staff; ERIC has experts in all the major areas education who are constantly exposed to the latest education literature in their areas
- Dissemination via the Internet
- The fact that most of ERIC's information/products/services are free and instantly available on the Web.

**Subject Matter Experts**

A consistent theme in the data is that ERIC' s greatest internal asset is its people, staff, partners and contractors, and their abilities to be innovative and flexible. The decentralized structure and the availability of subject matter experts is the unique competitive edge ERIC has to meet the challenges for new product development and delivery mechanisms. The strengths of ERIC'S utilization of subject experts and its organizational partners are repeatedly affirmed by the data.

**Peer Collaboration**

As the earlier discussion of partnering suggested, at the heart of ERIC's dissemination strategy is collaboration, both with peers and outside organizations. Of the $10 million budget, 78 percent is spent through its 16 subject-specific clearinghouses and 15 percent for publications. There are 13 adjunct clearinghouses and 2 affiliate clearinghouses. ERIC has acquisition arrangements with 2,190 research centers, universities, professional organizations, and federal and state agencies. In-kind contribution from host organizations is reported to be approximately 12 percent of the total ERIC budget. Further, ERIC links to the Web sites of 650 partner institutions and organizations that can distribute ERIC products. ERIC staffers participated in more the 470 education-related meetings, conferences, and workshops and gave more than 230 presentations in 1998. (Smarte, 1999).

The ERIC Executive Committee monitors new and emerging issues and plans the national agenda. The ERIC Technical Steering Committee serves as a conduit between the ERIC system's technical processing staff and ERIC Program Office. The ERIC Vocabulary

Review Group is responsible for the development and maintenance of ERIC's controlled vocabulary (ERIC Clearinghouse Statement of Work, p. 12). These committees are reported to have small budgets. It is possible that to further facilitate more efficiency with less, more support must be given to these types of system wide initiatives.

**Potential for Shared Product Development**

There are some new product ideas and issues that address the shared needs and interests of two or more clearinghouses. These items need to be identified for purposes of fostering greater collaboration and resource leveraging. For example, an online document to explain how to conduct, assess and interpret educational research and drug prevention education is a need expressed by several clearinghouses. New product development will be driven by new users to ERIC and a focus upon emergent and innovative materials development. To a large extent, a wealth of material relevant to present and future user requirements will not be in conventional bound publications. Given the growth in the international user community, there is also a need for translation of materials into other languages. ERIC needs to devise a workable plan for addressing this need.

**Cost of Success**

Because of the resource limitations, ERIC will have to pay special attention to managing increased marketing, technology increased demand and expectations, and demonstrated successes. There are clearinghouse experiences that suggest with increased advertising, major legislation and/or heated public policy debate inquiries to clearinghouses can be overwhelming. Several clearinghouses noted that they are unable to keep up with the demand for information. The 1987 OERI policy mandate pronounced:

> ERIC products and services should become more widely used and available; ERIC should become better integrated into OERIs mission of gathering, analyzing and reporting information on the status and condition of American education; and ERIC should serve a wider, more diverse audience, including policymakers, journalists, practitioners and the general public. (Goals 2000, p. 87)

If ERIC is to continue to be successful in meeting growing demands and rising expectations, issues of stakeholder alignment appear critical to the system's future opportunity for product development and information dissemination. If opportunity is a prerequisite for success, ERIC has great possibility for the twenty-first century as it supports and links to the Department of Education priorities, goals and initiatives, particularly its Goals 2000. In spite of the various limitations it faces, ERIC is positioned to be a centerpiece of the National Library of Education. Blaine Dessey, Director of the National Library of Education puts it this way:

> ERIC is really our biggest asset in terms of what we are trying to do with the National Library...ERIC forums a huge hunk of our national education information agenda because it's already done so much in terms of gaining a handle on the literature and making it available (quoted in Colker, 1999, p.28).

There is always risk associated with valuation of any asset--the risk of depreciation or the affirmation of appreciation. ERIC's history warrants a full system wide evaluation, one very likely to prove its true value to American education over the past 30 plus years and chart its future value in the new millennium.

**CONSIDERATIONS FOR SYSTEMWIDE EVALUATION**

It is good to know, from anecdotal and other nonsystematic data, that a system is "working" and, in fact, "working very well." Such data are not to be trivialized as they provide important dynamic data about a system. However, there is little doubt that more rigorous data collection in a well-designed evaluation schema is key to the planning of ERIC's future and its response to the rising expectations of its clients. Contrary to the ongoing debate and contention between quantitative and qualitative researchers, the fact is that no method of data collection is inherently better than another one. Both quantitative and qualitative methods can facilitate the development of meaningful evaluation questions and yield significant information about a system. Increasingly evaluation researchers and others

have come to recognize the fact that we must consider multiple methodological approaches for the best results. Evaluation and other scientific research have shown clearly how combining methodologies can promote a clearer and more accurate understanding of that under investigation. It is within this framework that the following design and methodology is recommended.

**Recommended Design and Methodology**

The effectiveness and appropriateness of ERIC's work products must be tied to a variety of user groups and utilize multiple methodologies. The foundational mission of ERIC as an archival and research database points to one discreet audience and a particular set of past, present and future needs. The mandate and mission of ERIC as a nerve center to foster and support the dynamic needs and interests of practitioners and stakeholders engaged in America's educational reform may suggest another kind of audience for evaluating product effectiveness and appropriateness. Finally, justification for ERIC's raison d'etre and funding level requests speaks to another cluster of evaluation issues.

Given the major findings herein, it appears that evaluating the effectiveness and appropriateness of ERIC products and information dissemination processes center around five basic factors and benchmarks: (1) quality (2) access (3) depth (4) practicality, and (5) cost benefit. A balance between ERIC's human resource capacity, technology utilization, and funding is the framework in which these questions must ultimately be addressed. Unquestionably, there is internal capacity and expertise within the ERIC community to undertake the kinds of evaluation activities required. However, there is also a dire need for external evaluative processes.

Building upon the decentralized strengths of ERIC's organization should be an integral part of the evaluation process. Given the dearth of systematic evaluation, the clearinghouses and partners are ERIC's best resource and repositories for unearthing "what worked" and "what did not work." A participatory process whereby they would be granted

resources to engage in a self-study to identify key products and information dissemination vehicles, past and present, as a precursor to external evaluation would be invaluable and is recommended.

Designing the parameters for self-study, synthesizing and refining the results by an external team could be Phase One. The information provided would serve to shape the second phase, end user evaluations, to be undertaken by the external team. Phase two would have to address the multiple types of audiences ERIC already serves, as well as address the possibility of emergent and new audience needs. The dynamic nature of technology absolutely suggests an evaluation model that utilizes both quantitative and qualitative approaches in a traditional scientific sense. However, models more related to product marketing research and information management (e.g. data mining, trend studies, and focus groups) are also recommended. To ascertain how ERIC can best meet user demand and support public access to information and knowledge creation, some attention also must be given to an analysis of the competitive forces, private, profit and nonprofit, that are shaping the educational product development and dissemination landscape. And, given its history of limited funding, any evaluation of ERIC products must also focus specifically on what level of clearinghouse resources should be assigned to the development of new Website content and services.

**Suggested Key Questions**

Future systematic as well as clearinghouse specific evaluations (regardless of methodology) should be framed around a number of key questions. These key questions emerged from a systematic review of a variety of data about ERIC products and the future of product development relative to the rising expectations of old and new customers. The questions cluster around issues of product success, user needs, quality and standardization, and clearinghouses and their partners. In the final section of this paper is a listing of potential questions that might guide a future system wide and systematic evaluation of ERIC. After

each question is a number. The number indicates where the evaluation question fits relative to the five benchmarks: (1) quality, (2) access, (3) depth, (4) practicality, and (5) cost benefit.

**Product Success**

- What have been the types of publications disseminated by ERIC in the past 5-10 Years? (2)
- Which publications/products have proven most successful? (2)
- What appears to have been the most effective means to get products/publications to ERIC audiences? (2)
- What seems to be the most effective mix of print and electronic products to meet the needs of today's ERIC audiences? (2,3)
- In what subject areas or operational areas can there be clearinghouse overlap and opportunities for collaboration? (5)
- What mechanisms are in place or can be instituted to give ongoing feedback about user needs and interests? (4)
- How does the need for knowledge-building, related to holistic and life long learning educational approaches, impact ERIC's future? (1,3)

**User Needs**

- Who are the past and present user communities of ERIC? How do you organize or categorize them as a defined targeted population? (2)
- How do these users come to know about ERIC? (2)
- What, if any, other educational database resources or services do ERIC customers use? (4)
- What, if any, advantages does ERIC have over other educational databases or services? (1)
- In general, what kinds of products/publications do users identify as most useful for them? (4)
- Specifically, what kinds of print products/publications do users identify as most useful for them? (4)
- Specifically, what kinds of Web-based or electronic products/publications do users identify as most useful to them? (4)
- How do users gain access to ERIC products/publications? (2)
- What other kinds of media (e.g. video files) do ERIC users want? Can ERIC adequately provide such materials through collaboration with selected new partners? (3)

**Quality and Standardization**

- What has been the long-term impact of low-level funding on ERIC's ability to meet user needs and demands? (5)
- How can the quality of ERIC products be maintained with fewer resources? How does this impact what is expected from ERIC? (1)
- What standards can be established for purging, superseding or otherwise presenting some information in varying formats? (3)

- How is quality maintained or measured with so much focus upon numbers (e.g. the number of hits to a Web site, the number of publications distributed)? (1)
- Are there common elements or attributes that should characterize every ERIC product and transaction? If so, what are they? (1)

**Clearinghouses and Partnerships**

- How can ERIC take a leadership role in offering real time conversations with subject matter experts or expert practitioners? (1)
- Can ERIC maximize its reach by expanding its partnerships? (2)
- Can ERIC increase its quality by limiting its scope? (2)
- How are subject matter experts used at the clearinghouses? (3)
- Should the role and use of subject matter experts be expanded and, if so, how should they be expanded? (3)
- What is the utility of programs such as a Senior ERIC Associates for expanding the use of subject matter experts? (3)
- How can user councils support ERIC's ongoing understanding of user needs and hot topics? (4)
- What system wide standards can clearinghouses adopt to establish greater consistency? (1)

## References


"All About ERIC." 1998 and 1999. Educational Resources Information Center, National Library of Education, Office of Educational Research and Improvement, U.S. Department of Education (Winter).

"ACCESS ERIC Assessment Report: Years 3 and 4, Covering 8/197 through 7/31/99." 1999. Rockville, MD: ACCESS ERIC.

Colker, Laura. 1999. *ERIC History.* Springfield, VA: Document Reproduction Service.

Collins, Timothy. 1999. "ERIC Directors Survey." Chicago, IL: Nexus Unlimited, Inc.

"Common Ground: Fundamental Principles for the National Information Infrastructure" 1995. First Report Of The National Information Infrastructure Advisory Council, (March).

ERIC Clearinghouse on Adult, Career, and Vocational Education.

ERIC Clearinghouses Statement of Work, April 10, 1998, U.S. Department of Education.

Heller, Nelson B. 1993. The Heller Report, (January).

Henson, Jane E. 1999. ERIC Technical Steering Committee.

Henson, Kane. 1999. "ERIC Directors Survey." Chicago, IL: Nexus Unlimited, Inc.

Hsieh-Yee, Ingrid. 1999. "ERIC Responses to Questions on ERIC User Services."

Imel, Susan. 1999. May Memorandum.

Lankes, R. David. 1999. "Adjuncts, Affiliates and Partners: Building an ERIC Network for the 21st Century," Director ERIC Clearinghouse on Information & Technology (September 27).

"Part D – National Education Dissemination System." www.ed.gov/legislation/GOALs2000/TheAct/sec941.html.

"Rising Expectations: A Framework for ERIC's Future in the National Library of Education." 1998 Report of the ERIC's Operations Framework Task Force, National Library of Education, ERIC.

Rothenberg, Dianne. 1999. "Frameworks Mailing Internal Report," (June 23).

Smarte, Lynn. 1997. ERIC Annual Report 1997.

Smarte, Lynn. 1999. ERIC Annual Report 1999. Rockville, MD: ACCESS ERIC.

Smith, Stuart. 2000. Memorandum dated March 24.

Smith, K.Wayne. 1997. "Beyond 2000 --- A Summary of OCLC's Strategic Plan Letter from the President," (September 5). www.oclcl.org/oclc/splan/letter.htm

Stonehill, Robert M. 1992. "Myths and Realities About ERIC." ERIC Digest. Washington, DC: Office of Educational Research and Improvement, National Center for Education Statistics. (ERIC Document Reproduction Service No. ED345756).

Stroup, Richard S. 1999. "Letter: The Facility and the Future of ERIC," (April 14).

Stubbs, Keith. 1999a. "ERIC FY 2001 Budget Request."

Stubbs, Keith. 1999b. "Issues Raised by OMB about ERIC FY 2001 Budget Report." Washington, DC: National Library of Education, U.S. Department of Education.

Stubbs, Keith. 1999c. "Staff Responses to Issues Raised by OMB Response to ERIC's FYI 2001 Budget Report."

Stubbs, Keith. 1997. ERIC Clearinghouse Recompetition, (September 26).

Stubbs, Keith. 1996. "Rising Expectations Report."

"The Three Phases of ERIC." 1992. Educational Researcher, (April).

Thomas, Bob. 1999. Memorandum, dated October 12.

"What is OCLC?" 2000, On Line Computer Library Center, Inc. www.oclc.org/oclc/menu/history.htm